SECRET OF RADIUM HEAT.

Lord Kelvin Suggests It May Be Supplied by Ethereal Waves—Illustrates His Theory.

What Prof. C. V. Boys termed "the miracle of radium" has naturally received much attention in London scientific circles. At a recent meeting of the science branch of the British association Lord Kelvin, in a paper which he read, made an interesting suggestion in connection with its perpetual emission of heat at, according to M. Curie's calculation, a rate of about 90 centigrade calories per gramme per hour.

He said that if the emission of heat at this rate went on for 10,000 hours there would be as much heat as would raise the temperature of 900,000 grammes of water one degree centigrade. It seemed utterly impossible to Lord Kelvin that this would come from the store of energy lost out of a gramme of radium in 10,000 hours.

It seemed, therefore, absolutely certain that the energy must somehow be supplied from without. He suggested that ethereal waves might in some way supply energy to radium while it was emitting heat to matter around it.

Lord Kelvin illustrated his theory by the following comparison: Suppose a piece of white and a piece of black cloth, hermetically sealed in similar glass cases, were submerged in similar glass vessels of water and exposed to the sun. The water in the vessel containing the black cloth would be kept very sensibly warmer than that containing the white cloth.

Here the thermal energy was communicated to the black cloth by waves of sunlight and was given out as thermometric heat to the water in the glass around it.

Thus through the water there was actually an energy traveling inward in virtue of the waves of light and outward through the same space in virtue of thermal conduction.

Lord Kelvin suggested that experiments be made comparing the heat emission from radium wholly surrounded with thick lead with that found in the surroundings heretofore used.

WHO FIRED FIRST SHOT?

Gunpowder Has Been in Use for Centuries—Known to Hindoos Before Birth of Christ.

There is abundant evidence that the origin of gunpowder and artillery goes far back into the dim ages of the past.

The Hindoo code, compiled long before the Christian era, says Stray Stories, prohibited the making of war with cannon and guns or any kind of firearms. Quintus Curtius met with fire weapons in Asia, and Philostratus says that Alexander's conquests were arrested by the use of gunpowder.

It is also written that those wise men who lived in the cities of the Ganges "overthrew their enemies with tempests and thunderbolts shot from the walls." Julius Africanus mentions shooting-powder in the year 275. It was used in the siege of Constantinople in 668, by the Arabs in 690, at Thessalonica in 904, at the siege of Belgrade in 1073, by the Greeks in naval battle in 1008, by the Arabs against the Iberians in 1147, and at Toulouse in 1218.

It appears to have been generally known throughout civilized Europe in 1300, and soon thereafter it made its way into England, where it was manufactured during the reign of Elizabeth; and we learn that few arms were possessed by the English in 1310, and that they were used at the battle of Crecy in 1346.

MAY DESERT LONELY ISLAND.

Inhabitants of St. Kilda, of Hebrides Group, Said to Be Planning Migration to South Africa.

That lonely island, St. Kilda, one of the loneliest of the Hebrides, is likely to be left lonelier still in the near future. Its inhabitants, it is reported, propose deserting the island and emigrating to South Africa. This is not much to be wondered at, for St. Kilda is one of the most inaccessible islands in the world—only four times a year, once a month in June, July, August and September, does a steamer call from Glasgow. For the rest of the year the inhabitants are entirely cut off from the outer world. Their special mail is in a tin box, into which they put letters, toss it into the sea and trust to Providence and favorable winds to carry it to the shores of the outer Hebrides. The population of the island has gradually dwindled to 75. The last time there was a great exodus was when 36 islanders left in a search for gold in Australia.

Sugar and Coffee for Soldiers.

The British government has decided to be more liberal with its soldiers and sailors in giving them sugar and coffee. Among the experts in such matters the belief has been gaining ground for years that moderate allowances of sweet stuff and of the Arabian berry are beneficial to strong, healthy men who are called upon to perform heavy tasks and endure hardships, while the entire medical profession appears to be inclined to the theory that weak and feeble men, women and children should, as a rule, refuse such indulgences.

Bounty for White Labor.

In the interest of making Australia "a white man's country," a government bounty is paid for sugar grown by white labor. Of the last year's sugar crop of 100,000 tons seven-tenths was produced by Kanaka black labor.

Potatoes Versus Education.

Pennsylvania farmers refuse to pay more than $20 per month for schoolteachers, but are offering $2 a day for men to dig potatoes.

Funds Belonging to Other Banks.

The 45 national banks of New York city hold from $400,000,000 to $500,000,000 deposits of other banks.

MODERN ROAD MAKING.

None But Trained Engineers Should Be Employed for Performing This Important Work.

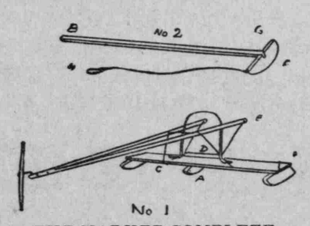
The old aphorism about pinching at the spigot and losing at the bunghole quite as often applies to rural practices as to city ways, indeed, it sometimes finds more frequent illustration in the country where cash has a relatively higher value than labor, and where theoretical knowledge is lightly esteemed. This bad policy is more often applied in the improvement or management of country roads than in almost any other line of work. If an organized system of drainage is undertaken the necessity for the services of a competent engineer is generally admitted, but roads are supposed to be different. As a rule only the surface is considered. That reduces the question to a choice between applications of dirt, gravel or crushed stone. There are usually a good many rival candidates for the office of road commissioner. No theoretical knowledge of mechanical engineering or of road-making is required of these candidates, and the citizens usually consider themselves fortunate if the position is held by a fairly intelligent man of energy and good intentions. He has to learn as he goes along, however, and the township generally pays dearly for his education. The "awful" country roads of the country have been the subject of a great deal of unfavorable criticism on the part of foreign visitors, and the loss sustained through the difficulty and sometimes suspension of traffic by reason thereof is enormous. We have long supposed this was one of the irremedial drawbacks of a new country, as land values are not high enough to justify heavier taxation for expensive turnpikes. However, engineers have been turning their attention to the matter, and now tell us that good roads and dirt roads are not incompatible; that good road making is all a question of knowing how, and that the money expended for road improvements which are not directed by skill and intelligence is money thrown away. It is time we outgrew this notion that a public office is a private snap, time that we outgrew our petty economies in public affairs. If the villages and townships of the United States, during the past 50 years had paid their money to experts who gave them honest advice and skilled services, men who would have coordinated their efforts, it is altogether probable we would have had a very different and a much better system of roads to-day. It is not too late to institute reforms now, and right here is a chance for our agricultural colleges to do some good work. The agricultural college, of course, cannot attempt to fit a man for rural occupation, but it can at least give him an intelligent knowledge of the problems involved in road-making and to that extent make him a good citizen, not likely to submit tamely to the waste of money by ignorant roadmasters. The engineering departments of our state colleges are graduating men well qualified to do work of this kind, and it would be economy on the part of municipalities to employ them rather than local officeseekers who are ever on the lookout for jobs of this kind.—Farmers' Review.

PERFECT CORN MARKER.

Useful Implement That Can Be Made by Any Bright Man from an Old Cultivator.

The illustration shows a corn marker without a fault. All cultivators are not alike, as some have straight tongues, and some have a seat attached, but they can all be used by simply removing the wheels and shovel beams.

No. 1 a shows hole where clevis attaches whiffletrees. This brings the draft on sled instead of frame; d shows



No 1

THE MARKER COMPLETE.

a plank spiked on behind, making a place for driver to stand, thus leaving a clear vision between his horses, and straight ahead; c shows where wheel spindles are secured to marker plank with yoke, secured on under side of plank by burrs. At b is an upright pin. This is to receive b of No. 2. This pole is just 8 feet long, and f is a runner made rounding at each end. This is 2 feet long, 8 inches wide, and 1 inch thick. It is made of hard wood, and is wedge shaped on the bottom; g is a wire attached with a ring on it. To the ring is attached a good stout string, and to this string is fastened a common snap h. Place b No 2 on b No. 1, snap h on same ring, and your highest ideal of a perfect corn marker will be realized. I use e for handles when turning at the end of field.—Orange Judd Farmer.

Girls as Berry Pickers.

J. L. Herbst, a strawberry grower of Wisconsin, tells about his methods of berry picking. He says that one of his girl pickers picked 158 quarts in one day. The ordinary amount of a day's picking with him is 80 quarts per picker in a day of five hours. Mr. Herbst was asked why he preferred girls to boys as berry pickers and replied: "We prefer girls for picking because they will stand the picking much better; they are not so talkative; they do not get tired and want to go, and as a rule will attend to business a good deal better than boys will."

HORTICULTURE

A TALK ABOUT ONIONS.

Profit of the Crop Depends Upon Sound Seed and Rapid Operations in Harvesting.

If we have had the right seed, a good season, and if our crop was sown just right for thickness there should be but few scallions and the whole crop should ripen at the same time. About September 1 it should be ready for the harvest. By all means leave them until you can pull the tops off with the fingers without much effect. The tools necessary for the harvest in the old way are the hands only. The tools used by me are a wheel hoe with a circular cutter, fine toothed wooden rake, plenty of crates, two strong men and for a plat of one acre about ten boys.

CRATE FOR HANDLING ONIONS.

With these appliances and help I should expect to harvest in one day a crop of from 700 to 1,000 bushels.

My crates are made from one-half inch lumber, of these dimensions: 18 inches long, 18 inches high and 12 inches through, inside measurements. They are made thus: the ends which are two strips 2½ inches wide are laid 12 inches apart on iron plates. Take cross strips 12 inches long and any width handy from 1½ to 4 inches, have nails just long enough to go through and clinch well, and nail your strips on, leaving a space between each strip of one inch, except the top space which make 1½ inches, for here is where you will grip the crate in handling. Nail well.

Nail on for side and bottom pieces any narrow width you choose, leaving the same spaces on sides as recommended for the ends. The bottom spaces should be about three-fourths of an inch. This completes your crate, as shown in the cut, and if it has been properly put together and well nailed you will have a firm and inflexible crate which will last for years and will stand a lot of banging. Mine have been in use for ten years and are in fairly good condition yet. They have been lent to my customers and have had lots of hard usage.

These crates are very useful not only in the onion harvest, but the handiest article you ever saw for harvesting potatoes, apples, root crops of all kinds, cabbage, and in fact useful at all times and all seasons. They hold exactly 1½ bushels even full. They weigh empty from seven to ten pounds; when full of onions, potatoes or apples from 85 to 100 pounds. Three of them put into a common market wagon endwise just fit the body.—John H. George in Orange Judd Farmer.

THE GARDEN IN SPRING.

Bonemeal is a good fertilizer for the sweet pea.

Spiraea Anthony Waterer is very valuable in the garden, flowering during the whole season.

If you have never grown salpiglossis, try it this season, and you will congratulate yourself on another valuable acquisition to the flower garden.

The new single peonies are attracting much admiration with their monstrous flowers, from 12 to 15 inches in diameter, with massive center of yellow golden anthers.

The more closely you keep the flowers of your sweet peas cut the more blossoms you will get. Tests at the Wisconsin station show that plants in subirrigated flower beds grew almost twice as tall as those watered on the surface.

Developing Peat Deposits.

The utilization of some of our extensive peat deposits is taking shape and many tracts of hitherto worthless land may prove highly valuable. A western capitalist is now buying machinery abroad to use in the manufacture of peat briquets in an extensive plant at Bismarck, N. D. It is estimated that 55,000 square miles of lignite underlies the Dakotas and Montana, while another wide belt stretches through the gulf states from Texas to Florida. The serious coal strike of the past winter is possibly not without its compensations. — Orange Judd Farmer.

Mites in the Hen House.

If there are mites in the hen-house, kill them at one fell swoop. Get ten cents' worth of carbolic acid, make a strong, hot soap suds, put half the acid in the sprinkling pot, pour in the hot suds and thoroughly sprinkle, throwing the solution high up on the walls. Do this in the morning and shut the fowls out during the day. Two days later clean out the house and use the rest of the acid in the same way. In this way in three days the number may be reduced from 10,000,000,000, or any other number, to 0.—Midland Farmer.